SEM-25-070 Options for Decarbonisation of the existing CRM Design Consultation paper 9th December 2025

SSE Response

February 2026

Who we are

At SSE we are driven by our purpose: to provide the energy needed today while building a better world of energy for tomorrow. SSE develops, owns, and operates low-carbon infrastructure to support the transition to net-zero. This includes onshore and offshore wind, hydropower, flexible thermal generation, electricity transmission and distribution networks, alongside providing energy products and services to customers. With current interests across the island of Ireland and Great Britain, in addition to carefully selected international markets, including East Asia, Europe and North America, SSE is both growing its footprint and its range of expertise in our bid to lead the transition to net-zero.

Since entering the Irish energy market in 2008, we have invested significantly, with a total economic contribution of just under €2bn in the last 3 years, supporting over 3,270 jobs in 2023/24. SSE Renewables owns 700MW of onshore wind capacity across the island and operates a total of over 1,000MW, with SSE Thermal owning and operating 672MW of flexible generation capacity to support security of supply.[1] SSER is currently developing additional onshore wind capacity in Ireland, as well as offshore wind projects like Arklow Bank Wind Park 2, and an emerging solar and battery pipeline. SSE Renewables has operated a voluntary Community Fund in Ireland since 2008, and SSE Renewables has awarded almost €1 million over the last year to over 268 community groups that neighbour our wind farms here. To date we have invested over €12.3million to community groups across the country.

At SSE, we have a clear focus on electricity infrastructure as the key to unlocking decarbonisation. Our growth helps power and is powered by society's drive to develop a clean, secure and affordable energy system. Recognising the international importance of decarbonising the power sector, SSE aims to achieve net zero across scope 1 and 2 emissions by 2040 at the latest including through investment in low-carbon dispatchable power generation options such as Carbon Capture and Storage, Hydrogen and electricity storage.

SSE Thermal owns and operates several of the most flexible and efficient gas-fired power stations in the UK and Ireland, with an operational fleet contributing c7.8GW of flexible generation. In addition to owning and operating gas fired power stations, SSE is active in various parts of the hydrogen production, transport, storage and use value chain. Our Aldborough Hydrogen Pathfinder will demonstrate the 'power-to-power' concept, delivering hydrogen production, storage and 100% hydrogen-fired power generation on one site by 2030.

[1] SSE's Economic Contribution to the UK, Scotland and the Republic of Ireland, FY24 results (PwC report), May 2024. https://www.sse.com/media/zz3huuie/eia-group-report-fy24.pdf

SSE Response

SSE welcomes the opportunity to respond to SEM-25-070 Options for the Decarbonisation of the existing CRM design Consultation and the accompanying Afry report. This is a non-confidential response.

SSE supports the introduction of appropriate and effective measures to reduce carbon emissions in the current CRM framework. This will further the decarbonisation of the Single Electricity Market CRM which we welcome and also aid compliance with the EU policy and CEEAG Guidelines. We also welcome the Afry analysis of emissions potential, international best practice and the proposed shortlist of measures.

As outlined in the Consultation, these measures are required to be in place for the T-4 auction after the current T-4 2029/30 auction so they will provide opportunity in the delivery of new capacity in 2030-2033.

While we welcome the initiatives and opportunities, the effectiveness of these proposals will depend on many factors. These include the clarity around parameters and thresholds, some of which will only be decided prior to the Auctions and the interaction with the ILCs and future auction frameworks for new capacity.

Questions:

Option 1 Green Bonus

1. Would the Green Bonus create an incentive that market participants can respond to within the timeframe of the remaining auctions under the existing CRM?

SSE supports an appropriate Green Bonus to provide an incentive that can be in place for the next T-4 auctions, as a measure to reduce carbon emissions in the current CRM framework. However, we consider that 1 additional year is insufficient to provide an incentive for decarbonisation for either new or refurbishing capacity. Also, if there is future uncertainty in the granting of extensions where required e.g. due to third party connection delays, an extra year Green Bonus could be of less value.

If a green bonus is introduced, we propose that an additional 2 years is more likely to create an incentive that market participants could respond to for the next auctions in the existing CRM, as for Poland. International precedent indicates that a longer contract term is required to provide financial viability. In addition, we consider that indexation is important for longer contracts to protect against inflation, as in GB 15-year contracts. This should be a consideration for the next State Aid application.

From the Afry analysis of international best practice, we note that all five of the selected other markets in Europe described in the Afry report have the option of fifteen-year capacity contracts for higher investments for new capacity. As mentioned, the GB capacity market has 15-year contracts including indexation. The future introduction of longer capacity contracts, including indexation, could facilitate greener technologies to meet green criteria.

For the next two auctions for new capacity, an additional 2 years would provide a more effective measure to support delivery of decarbonisation, and this would support a transition to longer term contracts.

We note that additional support would be needed to make more expensive low carbon fuels viable for flexible electricity generation, if the measure is ‘to give more environmentally beneficial capacity an advantage in the selection process’, as included in the CEEAG guidelines.

For existing capacity, we support an additional year for an ILC unit refurbishment. Units considering converting to a decarbonised fuel in future auctions may require a longer duration than 5 years to carry out a conversion. We note that Belgium has an 8-year contract for units that meet a higher specified investment threshold.

2. Where should the CO2 emissions threshold be set to incentivise higher efficiency gas plant as well as lower carbon technologies?

We do not propose a specific CO2 emissions threshold as we consider this requires modelling to assess the feasibility within industry and should also be compared with other international markets.

However, we propose that an indicative range for CO2 emissions could be provided prior to the next 2 auctions. This early clarity could be used to assess the possibilities for decarbonisation well in advance of auctions.

We also request clarity on how the threshold will be calculated e.g. whether emissions intensity would be considered. Operational parameters and load factors should be taken into consideration when the threshold is being set.

3. Is one year the appropriate additional contract duration?

SSE considers that one year would not provide a sufficient incentive for decarbonised development.

SSE supports an appropriate Green Bonus to provide an incentive that can be in place for the next T-4 auctions, as a measure to reduce carbon emissions in the current CRM framework. However, we consider that 1 additional year is insufficient to provide an incentive for decarbonisation for new capacity. Also, if there is future uncertainty in the granting of extensions where required e.g. due to third party connection delays, an extra year Green Bonus could be of less value.

If a green bonus is introduced, we propose that an additional 2 years is more likely to create an incentive that market participants could respond to for the next auctions in the existing CRM, as for Poland. International precedent indicates that a longer contract term is required to provide financial viability. Also, we consider that indexation is important for longer contracts to protect against inflation, as in GB. The Bonus year(s) should explicitly price in inflation e.g. 2% per year over the years of the contract, so that its value is predictable and not heavily eroded over time in the business case. We suggest that it should be the better of this inflated underlying price or the clearing price in the relevant auction so that the unit is not worse off from not participating in this auction due to the bonus year(s).

4. Is the definition of blended hydrogen-readiness appropriate i.e. that the unit must incorporate combustion equipment that is capable of burning a blend of up to 30% hydrogen? Should a higher/lower percentage blend be applied for the blended hydrogen-readiness definition?

Original Equipment Manufacturers are working towards the goal of Hydrogen capability, and this will be up to each OEM to confirm. There are many technical and safety aspects which require consideration for each project/ site. There may be scope for accepting a blend of hydrogen but to achieve blends up to 20% and higher, significant investment in upgrades are likely to be required. SSE understands that up to 20% blends are more feasible for gas turbines, but even for 20% blends, each site would need a detailed engineering study with the high likelihood that upgrades to combustion systems, auxiliary equipment, fuel systems and instrumentation would be required, with an associated long duration outage (dependent on work scope). This is something that OEMs are working towards.

Hence while we support the move towards hydrogen ready, the definition of blended hydrogen-readiness to be capable of burning a blend of up to 30% hydrogen needs to be considered in relation to these factors.

SSE also proposes that consideration should be given to future use of hydrogen and other lower emission technologies such as CCS in the upcoming State Aid application.

Option 2 Green Scalar

5. Would the Green Scalar create an incentive that market participants could response to within the timeframe of the remaining auctions under the existing CRM?

SSE supports a Green scalar as a decarbonisation incentive. A green scalar could offer an incentive for developers of new capacity in the next T-4 Auctions. A multiplier provides more immediate impact on business cases than a two-year Bonus, as upfront payment is more valuable in NPV modelling. The scalar has an immediate effect and it is a benefit for investment. Waiting for future years' bonus payment is less attractive due to inflation and delayed returns. The Scalar option allows for an additional payment from the first year of the Capacity contract which supports a more immediate rate of return for a capacity development.

In the unlikely event of a lower bid below ECPC, we propose that the scalar is set to 1 to prevent existing units being displaced unintentionally and distorting auction dynamics lower down the supply stack. This will ensure that the scalar will only change auction competitiveness of lower carbon assets against other new build units.

The uncertainty about its value and eligibility needs to be addressed. We would support the publication of indicative values of the Green Scalar and the CO2 threshold in advance of the remaining auctions in the existing CRM, to give participants the clarity to make investment decisions. Also, clarity is needed regarding the auction price cap and whether the scalar can result in a higher price than the ACP.

As for the Green Bonus, additional support would be needed to make more expensive lower carbon fuels viable for flexible electricity generation, if the measure is 'to give more environmentally beneficial capacity an advantage in the selection process', as included in the CEEAG guidelines.

6. What are the appropriate CO2 emissions thresholds that should apply for the Green Scalar? Please provide evidence and rationale to support.

See answer to Q2.

7. Should the Green Scalar be a continuous or stepwise function?

SSE has a preference for the continuous function. The constant slope is preferred for investment planning as step changes can create investment cliffs and could lead to questions over what step or part of the step the scalar should apply to.

Both options

8. Which of these two options – the Green Scalar or the Green Bonus – do respondents consider is likely to be more effective within the timeframe of the remaining auctions under the existing CRM?

SSE considers that the Green Scalar is likely to be more effective within the timeframe of the remaining auctions under the existing CRM. The scalar is preferred for its immediate effect and it is better for investment. A multiple provides more immediate impact on business cases than a bonus, as upfront cash is more valuable in NPV modelling. Waiting for future years' bonus payment is less attractive due to inflation and delayed returns. The Scalar option allows for an additional payment from the first year of the Capacity contract which supports a more immediate rate of return for a capacity development.

As discussed in Q5, there is uncertainty about its value and eligibility. It would be useful if indicative values of the Green Scalar and the CO2 threshold could be published in advance of the remaining auctions in the existing CRM. Also clarity is needed regarding the auction price cap and whether the scalar can result in a higher price than the ACP.

We consider that the Green Scalar alone is unlikely to be sufficient to support a low carbon fuel unit for flexible generation. Additional support would be needed to make renewable fuels in the electricity industry viable for flexible generation.

Additionally, as in Q5, we propose that for any bid below ECPC, the scalar should be set to 1 to prevent existing units being displaced unintentionally and distorting auction dynamics lower down the supply stack. This will ensure that the scalar will only impact auction competitiveness of lower carbon assets against other new build units.

Hence, SSE supports the Green Scalar for the timeframe of the remaining auctions, with issues as described to be addressed.

9. What technologies could be expected to benefit from the Green Bonus or the Green Scalar in the specified timeframe?

Gas turbines which use lower carbon fuels could benefit from the Green Bonus or the Green Scalar in the next 2 auctions.

However, either of these options on their own is unlikely to be sufficient to support a more expensive low carbon fuel unit for flexible generation. SSE would like to see more support for lower carbon fuels for the electricity industry to support the delivery of Irish carbon budgets and climate targets.

For example, biomethane is not currently fully supported by these proposals. Government policy is committed to delivering up to 5.7 TWh per annum of indigenously produced biomethane by 2030. However, biomethane production in Ireland is still at a low level and policy to enable its use is focused on providing renewable heat rather than use in power generation. Given its potential to support power sector decarbonisation, consideration should be given to the barriers to deployment in power generation.

10. What is the expected commercial running pattern for each technology and are there constraints on its flexibility?

Lower carbon fuels are likely to be OCGT technology which will have a lower running pattern than a CCGT, in addition to the higher costs of lower carbon fuels. This is an area of reform that is required in the market more broadly.

11. What verification process should apply to ensure compliance with the emissions threshold for either measure?

Our understanding is that annual CO2 emissions would be declared at Qualification and verified at Substantial Completion. We would support this approach in preference to an annual verification exercise in which values could vary year on year depending on the operating regime. Participants should not be penalised as an operator if the unit is dispatched at a lower efficiency point to support grid requirements.

We consider that generator units should be assessed on what is demonstrated from performance testing conducted as part of commissioning which will reflect the design capability of any installed units. This is preferable to annual verification - it is difficult to see how that could be enforced.

Supporting Proposals

Emissions Data Publication

12. Do you agree with the proposal to publish the carbon emissions data submitted at qualification by successful units and where relevant, ex-post data provided by successful units?

SSE supports greater transparency in the development of a future decarbonisation policy. As such, pending the scope and detail for this proposal, SSE generally supports this proposal.

Applications for a capacity contract include information about CO2 emissions intensity, with ex-post verification. This proposal is for the TSO to publish this information for each capacity market unit on an annual basis. There is further detail to be worked out with industry including the methodologies for measurement of the carbon emissions to ensure accuracy and transparency, who carries this out, guidelines for auditing and assurance etc.

Decarbonisation Declaration from Bidders:

13. How effective do respondents consider the proposed 'Decarbonisation Declaration' would be?

This proposal requires a director to sign a declaration acknowledging the role of the participant in meeting relevant decarbonisation targets and based on an accompanying plan to decarbonise the capacity with the objective of reaching net zero by 2050. The plan would include an indicative timeline until 2050, to be updated after 5 years.

The effectiveness of this proposal depends on many factors, some of which could be outside the control of the participant. In the SEM Capacity market, these could include an insufficient supply of low carbon fuel without the necessary policies and supports, lack of infrastructure, delays in technology developments and changes to planning, legislation and regulations. All of these would impact on the successful delivery of the decarbonised plant.

For these reasons we do not consider the proposed Decarbonisation Declaration to be an effective or practical way to incentivise decarbonisation.

14. How Is the proposed content of the 'Decarbonisation Declaration sufficient? Could other elements be included e.g. feasibility study, interim targets?

In our view, this is not a very practicable proposal for the Irish Capacity market for the reasons outlined above.

Other Measures

15. Do you consider that any of the other measures discussed in the accompanying AFRY Assessment Report, or any measures to achieve decarbonisation not identified by Afry, should be considered further by the SEM Committee? If so, please state clearly if your view relates to the timeframe of the present workstream (lifetime of the existing CRM) or longer-term CRM development. If so, please provide supporting evidence.

Under explicit Decarbonisation incentives, Option 9 proposes an optional longer long stop period for low carbon capacity projects with longer build times. We note the interim measure in the GB capacity market to introduce increased flexibility on long-stop dates for projects with longer lead times, which will be reviewed after 3 years. Generating units can benefit from an additional 24 months of construction time where they declare at prequalification stage their intent to deliver to that timeframe.

This is a measure which we propose could be considered for Ireland. If the longer long stop period is allowed for qualification, this would make it less challenging to qualify for a capacity contract and more achievable to deliver a capacity project based on the additional time available. The reality is that low carbon projects will usually have longer build times so an extension would likely be required to deliver the project. We consider that it is preferable to recognise this from the outset and permit the optional longer long stop period for more complex projects with longer build times. This additional period should also be allowed for qualification purposes.

We believe that this measure would be possible to implement in the next 2 auctions.